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Understanding The

# NOMADS OF RECREATION

## THE DILEMMA OF MANAGING DISPERSED ROADED RECREATION OPPORTUNITIES

A Case Study Of The South Platte River

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Forest Service



U.S. Department of Agriculture • Rocky Mountain Region

UNDERSTANDING THE NOMADS OF RECREATION

The Dilemma Of Managing Dispersed  
Roaded Recreation Opportunities

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## ABSTRACT

This paper examines the needs of dispersed roaded recreationist using the national forests, as well as the resource and management problems associated with this style of use. A twenty mile section of the South Platte River, in central Colorado, is used as an example to demonstrate the type of opportunities available and the extent of resource, user, and management problems associated with dispersed roaded recreation activities.

By analyzing the user needs, resource impacts, and management directions, options or alternatives were recommended. The options attempted to resolve the problems without eliminating the existing recreation opportunities or displacing the users.

# **CHAPTER I**

## **INTRODUCTION**

## I. INTRODUCTION

### A. Problem Statement

The Forest Service has been involved in providing recreation opportunities since the early part of this century. As early as 1905 the Forest Service recognized the importance of recreational activities, and by 1917 over 3 million recreationists visited the national forests in that year. (Roth 84).

Today over a hundred million recreationists visit the national forests each year and enjoy an enormous variety of recreational activities. These activities range from the more typical camping and hunting adventures, to soaring in the clouds with a hang glider or exploring the depths of a recently discovered cavern, deep within the earth. There seems to be as many recreation activities as there are recreationists. This variety has helped to increase usability and enjoyment of the Nation's resources. At the same time the management of the public lands has become increasingly more challenging and difficult for managers.

Recreation has become an important element in people's lives and a tradition for many families. Favorite memories and past experiences of many recreationists play an important role in their recreating habits and preferences (Clark 1979). Many people develop different 'styles' of recreating and enjoying their outdoor experiences but, not all recreationists want or seek the same experiences.

The development of the Recreation Opportunity Spectrum or ROS, in the late 1970's has provided a framework for categorizing and managing the tremendous variety of outdoor recreation activities that are occurring on the national forests. The ROS framework identifies a range of environmental and managerial settings which allows a variety of recreation opportunities to occur. The ROS classifications of recreation opportunities range from a primitive, secluded experience to an urban, populated experience. According to Clark and Stankey (1979), "By providing different kinds of recreational settings and accommodating different types and styles of recreational use, managers can best give people the opportunity for various kinds of experiences."

The Forest Service adopted the ROS system and integrated it into the planning and management of recreation on the national forests. The establishment of the Wilderness System has helped to provide opportunities at the primitive end of the spectrum while many of the already developed campgrounds and picnic areas on the national forests provide the more developed end of the spectrum. The area between these two extremes is where there seems to be the greatest possibility for the loss of opportunities to occur.

One area of the spectrum which seems to create many problems for managers and the public is Dispersed Roaded Recreation activities. Dispersed Roaded Recreation includes camping or stopping adjacent to a road or travel way where there is no developed facilities, and participating in some type of recreational activity. These activities are usually associated with a stream or lake but can occur almost anywhere. Some examples include fishing, swimming, camping, picnicking, shooting, and hunting.

This style of recreation has been enjoyed by forest visitors since the popularization of the automobile. Although the roads were primitive and there was limited access, many people would spend their leisure time camping or recreating in this manner. As the national forests grew in popularity and more people began using the same areas, it became apparent that resource impacts were inevitable. Usually, managers allowed or 'tolerated' this use and the associated impacts, if an area received only occasional use. Unfortunately, this allowed recreation use patterns and user preferences to be established. Then as the use and impacts increased, managers were faced with a greater regulation problem and misunderstandings by the public.

As the impacts increased managers of these popular areas began searching for ways to accommodate more users and reduce resource damage. In many cases they constructed facilities which helped protect the resources and provided some conveniences for the users. The result was the development of campgrounds and picnic sites at many of the popular areas (Ellison 1942). Although these facilities were and still are very popular with many recreationists, the dispersed roaded recreation activities still occurred throughout the national forests.

For years the Forest Service has continued to construct recreation facilities in areas popular for dispersed recreation activities. Also, in many cases where development of facilities was not possible or the money was not available, the Forest Service prohibited this type of use in an effort to eliminate the resource impacts. The result has been to displace the dispersed recreationists that prefer this style of use, disrupt their recreation experiences, and impact additional undisturbed areas. According to Downing and Clark (1978), "Dispersed recreation opportunities appear to occupy a unique place on the outdoor recreation opportunity spectrum, and efforts to harden dispersed sites will reduce the range of choice for these users."

These past attempts to manage dispersed recreation on the national forests have not resolved the problems. The reasons seem to be more apparent since the introduction of the ROS concept. If the Forest Service develops a campground at a dispersed site, the recreation opportunity is changed and the existing user can no longer obtain the preferred recreation experience. They must then, search for a new location. If this new area is undisturbed they will usually create new resource impacts and start the process all over. If the area is already being used for dispersed recreation activities there will

probably be additional resource impacts and conflicts with the current users. On the other hand if this type of use is prohibited, then the dispersed recreationist is still denied the opportunity to enjoy the forests in the manner they prefer.

Past experience indicates that these users will continue to search for other areas and the end result will be the creation of the "Nomads of Recreation". These recreation users are forced to wander from one area to another area, trying to find a place for their style of recreation. As popular areas become developed or use restrictions are imposed, they must once again move to new areas where this type of recreation opportunity exists.

As fewer areas are available and more people engage in a greater variety of activities, the problems will increase. Clark et al. (1984), indicates that dispersed recreation along forest roads in generally undeveloped areas is increasing rapidly in the West. Clark continues by saying, "This type of recreation accounted for nearly two-thirds of all recreational use in National Forests in fiscal year 1982 with much of this use occurring on or along the more than 245,000 miles of national forest roads and trails." This increased activity will create problems for managers as well as recreationists, if the current management practices are continued.

## B. Project Description and Process

This paper will attempt to analyze and develop recommendations or options for managing dispersed roaded recreation opportunities on national forest lands.

The process will require examining past research papers and a specific area currently being used by dispersed recreationists to determine user preferences and management problems. Utilizing this information and identifying the inherent resource opportunities available, recommendations for managing this type of use can be developed.

The proposed study area includes approximately 20 miles of the South Platte River corridor located on the South Platte Ranger District of the Pike National Forest in Colorado. Dispersed recreation activities along the river corridor are well established and very popular with all types of users. The area is within an hour drive of Denver, Colorado, and provides an excellent location for a case study dealing with dispersed roaded recreation opportunities.

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### C. Project Goals

The primary goal of this project is to develop management recommendations and guidelines which will allow the Forest Service to effectively administer the national forests while still accommodating dispersed recreation activities, and providing the recreation experience desired by this type of user. To accomplish this goal the following objectives need to be met:

1. Provide for a variety of dispersed recreation opportunities including overnight camping within the South Platte River corridor.
2. Minimize resource impacts associated with dispersed recreation activities and meet Land Management Plan Standards and Guidelines for resource protection.
3. Minimize recreation user and private landowner conflicts created by dispersed recreation activities.
4. Minimize Law Enforcement, maintenance, and management costs and efforts expended by the Forest Service.

It is important to understand that not all dispersed recreation user groups will be accommodated and that some user groups will resist any type of management. In many cases, these groups are attempting to engage in activities which are illegal or unacceptable no matter where they occur. The Forest Service will not allow this type of use and will discourage such activities whenever they are encountered.

The information and use statistics cited in this paper are obtained from Forest Service Recreation Information Management (RIM) data, and limited site reconnaissance. Specific resource impacts and user patterns are based on personal observations during the past two field seasons and previous observations by past employees.

**CHAPTER II**

**SITE INFORMATION**  
**AND**  
**LITERATURE REVIEW**

## II. SITE INFORMATION AND LITERATURE REVIEW

### A. Site Description

The South Platte River Corridor is located approximately 50 miles southwest of Denver, Colorado, and is within an hours drive of over 2 million recreationists. The area is accessible by several paved access roads but almost all roads within the area are unpaved. The main access road parallels nearly twenty miles of the South Platte River and provides almost unlimited access to the river. The majority of this road is unpaved but several sections traversing private property have been paved by the counties. The easy access and rustic character increase the popularity of the area.

The majority of the area is within the Pike National Forest and administered by the South Platte Ranger District. Private lands and several small communities are located along the river. The South Platte River is the dividing line between Douglas County on the east side and Jefferson County on the west side. Often law enforcement and emergency jurisdiction is confusing.

The South Platte River is the highest quality trout stream on the East slope of the Rocky Mountains and is classified by the Colorado Division of Wildlife as a Gold Medal Trout Stream. According to the Colorado Division Of Wildlife the river produces more trout per surface acre of water than any other stream in Colorado.

The South Platte River Corridor is very scenic with a variety of landscapes. The elevations range from 5800 feet to 6500 feet and the slopes vary from broad, nearly flat flood plains to steep cliffs created by the cutting action of the river. Several highly attractive rock formations and mountain ridge lines form the boundaries of the river corridor. The soils are highly erosive granite with a low productivity and water holding capability.

The area receives 15 to 20 inches of precipitation per year, with most of the moisture accumulating during heavy thunderstorms in the summer and moderate snows in the winter. The river often freezes but is rarely frozen all winter. The temperatures in the summer reach the 100's and in the winter are often below zero, but by Colorado standards the area is considered relatively mild. People visit the South Platte River year-round.

The vegetation along the river consists mainly of willows, sedges, and a variety of wetland grasses, with scattered cottonwood, pine, and aspen trees growing in some areas. The surrounding slopes are covered with mixed stands of ponderosa pine, Douglas-fir, and aspen trees.

A large variety of wildlife use the area during certain times of the year. The larger animals include mule deer, elk, big horn sheep, mountain lion, bobcat, and black bear. The smaller animals include beaver, rabbits, squirrels, Merriam turkeys, various hawks and eagles, and occasionally ducks and geese. The river supports an abundance of rainbow, brown, and brook trout, and is considered by many recreationists to be one of the best trout fishing streams in Colorado (U.S. Forest Service. 1986).

#### B. Use Information

The South Platte River corridor provides a tremendous recreation opportunity for many forest visitors. The accessibility to the river, the variety of possible activities, and aesthetic quality of the area combine to create an ideal situation for recreationists. This area attracted more than 400,000 visitors in 1986 and produced over 170,000 recreation visitor days (RVD's) for dispersed recreation activities alone (1986 RIM data). The majority of this use occurs between the Memorial Day and Labor Day holidays, although it is not uncommon to have heavy use during warm periods throughout the year.

The major dispersed recreation activities include camping, fishing, stream play activities like swimming, tubing, and rafting, motorcycle riding, hiking, picnicking, and limited hunting. Other activities which occur in the area are horseback riding, rock climbing, nature study, and target shooting.

In addition to the numerous dispersed opportunities in the canyon there are several developed sites. There is one developed campground with 19 camping units, and four picnic areas with a total of 23 units. The total use resulting from the developed facilities is over 6500 RVD's.

#### C. User Needs Assessment

Many articles and research projects have been published on the subject of recreation and leisure time activities. For the purposes of this paper it is necessary to examine the studies which address the needs, preferences and motivations of the dispersed recreationists to fully understand the implications of various management actions. Without a full understanding of what dispersed roaded recreationists are looking for it is difficult, if not impossible, to provide a desirable recreation experience.

According to Stankey and Brown (1981), diversity is a major key in providing desirable recreation experiences for any group. They state, "In offering diverse settings where participants can pursue various activities, the broadest range of experiences can be realized." Based on the Recreation Opportunity Spectrum concept as described by Clark and Stankey (1979) "... a recreation opportunity setting is the combination of physical, biological, social, and managerial conditions

that give [recreational] value to a place." Therefore, recreational experiences are a combination of various physical and psychological factors, and providing a greater variety of combinations of factors helps insure that more recreational opportunities can be met.

By examining the basic components or attributes of a recreation setting, that is the physical-biological, social, and managerial attributes, a more thorough and complete understanding of the preferences of the users can be established. Also this division of attributes provides a good framework for discussion of the specific needs of dispersed recreationists. First it is necessary to better define the basic recreation setting attributes as identified by ROS.

The physical-biological setting is the combination of vegetation, scenery, topography, and presence or absence of landscape features like lakes, streams, meadows and mountains. Also for many recreation activities, the presence of various animals and fish are important to obtain the desired recreational experience. Fishing, hunting, bird-watching and photography are a few examples. These physical-biological conditions combine to create an endless variety of settings for recreationists. Physical-biological attributes provide the basic raw materials for many recreational activities (McCool et al., 1984).

The social setting is composed of those elements which affect the social aspects of a recreational experience. Such factors as the amount and type of use occurring in an area, including non-recreational activities, can affect the experience of a user. For instance, a person looking for a wilderness experience is probably not going to find the solitude they desire in a family campground or developed picnic area. Also the amount of interaction between groups or people is critical. McCool et al. (1984) states, "Social attributes are very important to many users and, as with the physical-biological attributes, the importance attached to them will vary among users, between managers and users, and with time, group affiliation, and other variables."

The third category of attributes which affect the recreational setting are managerial activities. These activities influence the administration of an area and can deal with protection of a resource, what recreational facilities are available to visitors, and even what non-recreational uses such as timber harvesting or grazing are allowed in an area. Management decisions can be in the form of regulations which control or limit the type and amount of use, physical constraints such as barriers, signing, or other site modifications. Also such activities as cleanup, maintenance, information dissemination, and law enforcement patrols, throughout an area, produce the managerial setting. Obviously this portion of the recreation setting is where the Forest Service has a major opportunity to affect change or influence the recreational experience of the users. As described in the problem statement of this paper, the past management activities of the Forest Service in dispersed areas has had

a large, negative impact on the recreation experience of millions of dispersed roaded recreationists.

So what combination of factors and conditions do dispersed roaded recreationists desire in their recreation setting? To answer this question several studies on dispersed recreation activities will be reviewed and the specific preferences of dispersed users identified. These preferences and needs will be categorized and described in terms of the three main setting attributes discussed previously.

The first study was completed by Clark et al.(1984) and provides a comprehensive study of dispersed roaded recreation activities in three national forests in Washington and Oregon. Also two other papers (Hendee et al., 1976) and (Dowing and Clark 1978) discuss the same research project. Information from all three papers will be summarized and used to indicate user preferences.

The study occurred in areas which had very similar site and user characteristics as the South Platte area. For instance, all areas have minimal developed facilities, a wide range of recreation opportunities including motorcycle use, all areas are easily accessible from large urban areas and were heavily used during weekend periods, and the areas are intermingled with private property. This study also separated day use and overnight use, so where significant differences occurred, they will be identified. The results of this study are summarized below.

#### Physical-Biological Conditions:

One of the most consistent physical site attributes sought by dispersed recreationists is access to water. Hendee (1976) states, "The affinity of dispersed recreationists for water was evident in the location of 84 percent of all sites directly adjacent to or nearby a river or stream." Clark et al. (1984) reported that, "Both campers and day users felt that access to water was the single most important factor when choosing among campsites." An analysis of actual site use, also indicated that those sites which lacked water were used only when other sites closer to water were occupied. Two possible reasons for this desire to be close to water appear to be the daily human needs for water, and the activity oriented need like fishing, boating, or swimming.

A desirable biological feature identified by users is the presence of trees for shade or protection from the weather, privacy, and esthetics (Clark et al., 1984). Another possible reason for users wanting to be located near trees, but was not identified in this study, could be the need for firewood. Although Hendee et al.(1976) indicated that firewood was not a problem in the area, Clark et al.(1984) indicated that access to firewood ranked fifth among user preferences and would seem to support this idea.

Another important physical need that campers indicated was a level spot for their tent, or recreational vehicle. The reasons for this criteria are obvious if you have every tried camping in an area which is not level. Day users were less concerned about level areas but still felt it was an important factor in site selection. Also larger flat areas were highly desirable by users. Often preferred camping or parking areas could accommodate four or more vehicles.

In addition, there appears to be a need for access to the site by two wheel drive vehicles. One of the undesirable physical site features identified by dispersed users, in this study, was difficult vehicular access to sites. Although the definition of difficulty varies among users, generally both day users and overnight users occupied sites accessible to two wheel drive vehicles (Hendee et al. 1976)

At the same time improving access such as paving or grading of roads was not desired by the users either. Users seem to be willing to accept and even prefer the natural site conditions rather than having sites improved. According to Clark (et al 1984), almost one-half the campers and one-fourth of the day users in the study indicated that they liked the areas the way they were, when asked what facilities and improvements they would like provided.

Several other physical-biological site attributes were identified by users during this study. Scenery was the fourth most important site characteristic among users. Natural appearing sites and visiting remote areas was also important. The presence of big game animals like deer and elk were identified as a reason for using particular areas, as well as good fishing opportunities.

#### Social Conditions:

This study indicates a variety of social conditions and factors influence the preferred recreational setting of dispersed roaded recreationists.

One of the most important social factors indicated, was that users felt dispersed roaded areas were less crowded (Clark et al. 1984), and provided more privacy than developed campgrounds. Hendee et al.(1976) states, "Dispersed road recreation was preferred by 85 percent of users because they could camp away from others not in their party and have few encounters with other people." Also actual site locations identified in the study indicated that ninety percent of all sites had only one to three other sites in view. Plus the visual isolation may even be greater depending on the occupancy rates of these sites.

The users also felt that the variety of recreational opportunities available in dispersed areas was a positive social attribute. Hendee et al.(1976) and Clark et al.(1984) reported that nearly half of the users preferred dispersed areas because they could engage in activities not allowed or appropriate in developed recreation sites. Freedom to use motorcycles and four wheel drive vehicles, to alter sites to suit their specific needs and to have larger groups camping or recreating together were important values of dispersed roaded recreationists. Hendee et al.(1976) reported that the average group size in the area was five, but over 22 percent were groups larger than seven. Recreation party size ranged from 1 to 60.

When users in the study areas were asked why they visited the areas several other social reasons surfaced. For example, the area was familiar to the user, was within an acceptable driving distance (usually 50-60 miles), or provided a particular recreation activity. Some users indicated that the ability to explore new areas was important.

#### Managerial Conditions:

The major managerial attributes of the recreational setting desired by dispersed roaded recreationists in this study included the following.

As mentioned before users preferred the lack of developed facilities. Many recreationists felt no improvements were needed, while others indicated that toilets and trash cans would be acceptable. Kent (1978) and Clark et al.(1984) both identified that there is mixed support for providing more facilities. Kent (1978) identified that many users who preferred additional facilities, quickly changed their minds when they considered that additional facilities might increase use or change the type of users of an area. Kent (1978) states, "While respondents would prefer a few conveniences they are more than willing to accept the unimproved conditions in order to protect the type of opportunities they are seeking." Clark et al.(1984) identified that day users were more likely to seek additional facilities than campers and that the lack of facilities may be the reason why the day users were not camping in the area. Along with the lack of facilities, many users (about 60 percent), identified the lack of fees as a reason for preferring dispersed areas.

Also, as a result of not having developed facilities, 82 percent of the campers felt dispersed sites could be easily altered to better accommodate their needs. Clark et al.(1984) reported that, "Recreationists are often observed moving campfire rings, erecting shelters or temporary outhouses, or moving logs and rocks to facilitate access to sites. In so doing, they are able to accommodate the site to their own group activities."

The lack of regulations and rules was identified as a desirable management attribute by many users. Over 75 percent of the users indicated that a lack of regimentation, often unavailable in developed sites, is one of the values of this style of recreation (Clark et al 1984). At the same time, many users recognize the need for some management of the areas and expressed support for the presence of management personnel, especially ranger patrols.

Many users contacted in this study, commented on several situations which are affected by management actions. These comments provide a basis for making some assumptions about their management preferences. For instance problems like litter and garbage, noise from motorcycles, resource damage, crowding, and fire danger were mentioned. Although most users did not feel there are many serious problems associated with dispersed recreation, several characteristics which users avoided during site selection would indicate that users are concerned with certain problems. Users indicated that, if possible, they avoided crowded and trashy sites, noisy locations, and sites hazardous to children (Clark et al., 1984). Therefore, it appears that minor management actions aimed at reducing these issues would be acceptable to most users.

Sanitation problems were not identified by users as being a concern and according to Clark et al.(1984), 39 percent of the campers and 75 percent of the day users had no toilet facilities with them. The study indicated that human waste was found at most campsites (up to 11 different locations per site), and the majority was within 75 feet of the fire ring. In addition, Hendee et al.(1976) reported that half the camping parties had domestic animals of which two-thirds were allowed to run loose and increase the potential for sanitation problems.

When questioned though, over half the users agreed that human waste could be a serious threat to the recreational enjoyment of the area and water quality. User awareness of the impacts of human wastes on human health, water quality, and recreational enjoyment varied with a significant number of users having no opinion. From this information and earlier discussions on desired facilities, it appears that users would probably be agreeable to management actions which reduced problems associated with sanitation.

The second study was conducted in the Southeastern portion of the United States. A user survey of dispersed areas indicated the relative use and preferences for selected forest characteristics. Although there are significant differences in the physical-biological conditions between the West and South (terrain, vegetation, climate etc.), this study does indicate some similarities in user preferences. The results are summarized below.

### Physical-Biological Conditions:

This study indicated that 83 percent of the people contacted, participated in one or more recreation activities associated with forested areas and that water-oriented activities comprised the major portion of these activities (Rudis 1984). Over 50 percent of the users sampled, indicated they recreated within one-tenth of a mile from water.

This study also indicated that users with a more urban oriented background preferred recreation settings in more open vegetation compared to dense forest vegetation. Since most dispersed roaded users seem to be from urban centers (Clark et al 1984), this preference appears to be significant. Although it is very likely that because of the southern vegetation patterns, this preference is only of regional significance.

### Social Conditions:

Users indicated a preference for using public lands which were located away from farms or urban centers for their dispersed recreation activities. Also, 45 percent of the users sampled, indicated that they preferred sites located within one-tenth of a mile from roads (Rudis 1984). This seems to indicate a desire to recreate in less crowded areas, but no definite conclusions can be assumed. Unfortunately more specific social site preferences such as the number of people using sites were not obtained during the study.

### Managerial Conditions:

Managerial setting attributes were not directly sampled in the user survey, but a field inventory of regulatory signs and litter provides some insight into existing managerial conditions in the South. Rudis (1984) reports that, "Signs limiting activities are found upon entering only 15 percent of the timberland. However, 95 percent of the timberland is in private ownership. Undoubtedly many recreation activities are restricted on private land. Fences are encountered upon entering more than half of the timberland." Since the users indicated a preference for using public lands, which apparently have fewer restrictions than much of the private lands, it seems reasonable to assume that users prefer less managerial restrictions in their dispersed recreation settings.

Litter was found at dispersed sites in 18 percent of the locations sampled, and although this does not seem excessive, it does indicate a lack of managerial activities in the areas.

The third study which looks at river user preferences was conducted across the United States along 45 different river segments. Although much of the information collected is not relevant to dispersed roaded

recreation activities, some similarities with the previous studies are identified. Also, since many dispersed roaded users participate in river related activities it seems appropriate to examine this information. The results are discussed below.

#### Physical-Biological Conditions:

Many river users are looking for areas with high scenic qualities, and a relatively peaceful, natural setting (Knopf and Lime 1984). Also many river users are looking for a specific challenge or skill level of river. The different levels vary tremendously depending on the individual's skills, but the physical condition of the river (amount and type of rapids, flow rates, etc.) play an important part in selecting an area. No specific site criteria were identified though.

#### Social Conditions:

Knopf and Lime (1984) indicated that many river users are in groups of between 2-7 people, but clubs and organizations using rivers are almost always in groups greater than 10. Although this varies depending on the river, this seems to suggest that larger groups do frequent dispersed roaded areas along streams and rivers.

Many river users indicated that they were seeking areas which provided quiet, tranquil settings, and were trying to get away from crowds. In one sample along the Colorado River, one-fourth of the visitors felt they saw too many people while floating the river (Knopf and Lime 1984). Again this seems to indicate a desire by users for privacy and little interaction with other groups in the area.

#### Managerial Conditions:

River users seem to be more aware of resource problems and slightly more receptive to management actions than other dispersed users. For instance, 40 percent of the floaters, on the Deschutes River in Oregon, thought environmental damage was increasing from recreational use and that managerial control was necessary (Knopf and Lime 1984). But in another sample, along the Kings River in California, 37 percent of the users were opposed to agencies providing more patrols to assist users and enforce regulations. This attitude would seem to agree with the studies discussed previously, that some users are seeking areas with less managerial controls.

Human waste, water pollution, soil erosion, vegetation destruction, and litter were commonly mentioned by river users, and although opinions about specific management actions varied among groups, this awareness of environmental impacts seem to

indicate that these groups would support some management actions aimed at reducing these problems.

Unfortunately very little information was available on the type and amount of facilities that river users felt was acceptable. In one sample along the Kings River in California, approximately one-fourth of the users were opposed to providing short hiking trails, and campsites at put-in and take-out points along the river (Knopf and Lime 1984). From this single sample it appears that some river users would agree with dispersed roaded users that a lack of facilities is desirable.

The last study to be discussed deals with user preferences and satisfaction along riparian areas in a designated wilderness area. The specific user types are different but some similarities in user preferences exists with the previous studies. The results are summarized below.

#### Physical-Biological Conditions:

Many users preferred areas with excellent views of scenery, near sources of water, and within virgin forests or meadows (Hoover et al., 1985). Other natural features like wildflowers, wildlife, and fishing opportunities were also important to visitor satisfaction.

#### Social Conditions:

This study was conducted within a designated wilderness area and therefore the quantitative results of social factors dealing with encounters with other groups and party size are not appropriate for comparison with dispersed roaded areas. Users were concerned with similar factors like finding camping areas with visual isolation and little evidence of previous users (Hoover et al., 1985).

#### Managerial Conditions:

Managerial conditions were not sampled but many users indicated a dissatisfaction with management related problems such as litter, water pollution, and destruction of vegetation, as well as the presence of cattle and the lack of good fishing areas. It appears that users did recognize that resource impacts were occurring and thus, would not be opposed to certain management actions. Hoover (et al 1985) mentions, "...managing this environment, and the uses of it, to maintain and enhance its ecological health also will contribute to the value it holds for the visitors." As mentioned before this study has some basic differences when compared to dispersed roaded areas, but if the dissimilarities are reduced then maybe both user groups will have greater recreation opportunities.

## Summary of User Needs:

In general, most dispersed roaded recreationists, as well as several other types of users, have indicated that they prefer and seek similar setting attributes for their dispersed recreation activities.

Physical-biological conditions include locating in an area with access to water; in scenic areas which often provide naturally large, flat areas for locating tents and parking recreational vehicles; and near trees for screening and visual isolation, but not in extremely dense vegetation. Users preferred access to sites by two-wheel drive vehicles and areas within an hour drive of their homes. Also many users are looking for specific activity oriented physical or biological attributes such as a particular big game species, or good fishing habitat, or a certain set of physical conditions such as challenging rapids which test the skills of users.

Social conditions preferred by dispersed roaded recreationists included using areas which had a variety of activities available and were not as crowded as developed sites; and had sites which provided a sense of privacy from other users. They tended not to socialize with other groups. Users preferred the freedom and lack of regimentation available in dispersed areas and indicated that they engaged in activities not allowed or appropriate in developed recreation areas. Often dispersed roaded recreationists visited areas in larger groups and enjoyed exploring new areas.

The managerial conditions preferred by users varied slightly between different groups but generally most users did not want any additional facilities, especially if they thought it would change the amount and type of use in the area. More day users indicated a desire for facilities, like toilets and trash cans, which were identified most often. The lack of fees, lack of management regulations and rules was preferred by most users but some felt that more agency patrols in the area might be needed to reduce certain impacts to the resources. Most suggested management actions which limit user freedoms would be opposed.

It should be understood that the previous discussion is a listing of user preferences and thus represents only one side of the situation. Since managers of public lands are given the responsibility to administer areas for multiple use and for future generations, they must be concerned with activities which affect those goals. Therefore, it is important to examine the resource problems, along with the views and management directions of managers. Hopefully a balance between user preferences and management needs can be developed so that dispersed roaded recreation opportunities can be provided.

## D. Dispersed Roaded Recreation Impacts and Concerns

Managers and dispersed roaded recreationists appear to have different views on resource impacts and user problems. According to Downing and

Clark (1978), managers of recreation lands, especially public lands, tend to rate recreation impacts as more serious than do users. Clark et al (1984) suggests, "...the differences include the possibility that managers have more information about the real nature and extent (magnitude) of the problems." This difference in perceptions of the problems has lead to many conflicts and misunderstandings between users and managers.

The following discussion reviews the current management direction and some of the literature on resource problems associated with dispersed roaded recreation activities, as well as specific resource problems identified along the South Platte River.

### 1. Resource Impacts

Many resource impacts occur from simply using an area and are not a result of deliberate attempts to destroy or damage the environment. Unfortunately, many of the environmental impacts from dispersed recreation activities are very obvious because of their location. Hart and Debyle (1978) stated, "Most of the severe impacts, however, are concentrated near roads, trails, streams, and lakes. These are the very areas that need the most protection, both for aesthetic and water quality reasons."

While many dispersed activities cause some impacts Hart and Debyle (1978) conducted a study of impacts of different activities and concluded that the following activities seriously impact the environment. The activities are dispersed camping, horse riding and pack stock use, and off-road vehicle use. Along the South Platte River camping and off-road vehicle use, especially motorcycles, are major activities, while horse use does occur it is not a significant use. Therefore much of the information and discussion of impacts by Hart and Debyle can be directly applied to the South Platte River corridor.

Vegetation: Hart and Debyle (1978) indicate that the impacts to vegetation from concentrated camping use almost always results in a large reduction in ground cover vegetation and severe damage or death of seedlings and advanced reproduction of trees. They continue by saying that Lepage (1967), found that many of the grasses and other species that withstand trampling tend to replace many of the less hardy species. This loss of diversity could have a negative affect on the riparian ecosystem. Frissell and Duncun (1965) reported that even light use on an area may destroy more than 80 percent of the ground cover.

The impacts to vegetation along the South Platte River occur from not only camping activities but picnicking, stream-play, use of vehicles, both two and four wheel-drive, and fishing. The impacts include trampling of ground cover species of grasses and forbs; removal of willows and younger trees, and damage to mature trees from nails, carving and firewood collection. This loss of

vegetation reduces the visual character and screening potential of the area, as well as increases soil loss. Habitat for many smaller animals is reduced and may have an adverse impact on these species unfortunately no quantitative data were available.

The impacts to the trees will eventually result in the loss of most trees along the river. Currently only a few recreation use areas have any regeneration of the tree species. As the larger trees die from stress or natural causes, there are no younger replacement trees growing.

Soil Damage and Loss: Hart and Debye (1978) reported that soil compaction of up to 6 inches (15 cm) in depth, usually occurs in campgrounds and in areas where recreation use is concentrated. This compaction reduces infiltration and percolation of the soil, and makes natural site regeneration more difficult. With more soil exposed and less water able to percolate, increased runoff tends to accelerate soil erosion and loss. Fortunately most camping areas are on gentle slopes and therefore soil loss is minimal in campsites.

Along the South Platte River the majority of soil is highly erosive decomposed granite, and many areas exhibit the characteristics mentioned above including compaction and lower soil moistures. Vehicles driven near the river often create additional compaction of the soils and motorcycle or all-terrain vehicle use, on the surrounding steeper slopes, creates ruts and increased soil erosion. Harrison (1980) indicates that motorcycle use can affect soils by what is called shear damage. The slipping or shearing of the tire as a motorcycle accelerates or climbs steeper slopes causes a digging action which creates ruts and compaction. Then runoff continues to erode the rutted areas and the result is additional erosion. Along the South Platte River several motorcycle trails exist and although the quantitative amount of erosion is not known, visual observations indicate that additional erosion is occurring as a result of these trails and activity.

Water Quality Impacts: As reported by Hart and Debye (1978), Merriam and Smith (1974) found that campgrounds located near rivers or lakes contributed to increased levels of suspended sediment and added to the microbiological load from human and domestic animal wastes. Also Clark et al. (1984) reported that, "The water quality study in the Greenwater watershed found deterioration of water quality on weekends, when use was heaviest, as distinguished from weekdays." Although the impacts of campground use on water pollution is debated among researchers, several studies support the idea that potential health hazards can exist under certain conditions (Christensen et al., 1979). Hendee et al. (1976) indicated that about half of the dispersed campers, with recreational vehicles did not contain their sink waste water but let it run out on the ground. Human

waste, domestic animal waste, and discarded sink water, if concentrated into an area close to a water source, would seem to have the potential to adversely affect water quality over a period of time. Also increased runoff and exposed soils would almost certainly increase sediment loads in adjacent streams. More research is needed to verify the environmental impacts, and the significance of the problems, but until conclusive proof is established, it will be assumed that maintaining the water quality is a concern for the managers of the South Platte River.

The South Platte River currently flows into the drinking water supply for Denver and the surrounding cities. At present the Denver Water Board has expressed concerns for water quality along the river, but no major problems have been identified. Local landowners have indicated that their well water quality has been adversely affected but again no verification of the impacts has occurred.

Based on observations of the recreational use patterns along the South Platte River, the potential for water quality problems is high. Many areas have extremely concentrated use on weekends. Camping, picnicking, swimming, tubing and rafting, sun bathing and other activities occur in the water and on the shoreline throughout the area. Although no quantitative data exist, the water turbidity and sediment entering the stream are assumed to be increased from recreational activities along the river. Vehicles in and along the shoreline increase the potential for oils and other chemicals to enter the water.

Wildlife Impacts: Impacts to wildlife as a result of dispersed recreation activities varies. One study by Ward and Cupal (1978) which metered the heart rate of elk, indicated that, "Close range gunshots and humans on foot consistently produced more reaction (from the elk) than moving automobiles, motorbikes and low flying aircraft." Table 1 (adopted from Ward and Cupal 1978) shows the reaction of the elk to a variety of human related activities. Although many animals may react differently and this study only dealt with one species of big game animal, it seems reasonable to assume that heavy dispersed recreation use does have an effect on the larger animals like deer, elk, and sheep. To what extent and how significant the impacts are can only be determined by further research.

Table 1. Heart rate and activity response of two cows and a spike elk to disturbances.

Disturbances	Distance to elk (m)	Times occurred	Positive heart reaction	Times elk moved away
Sonic boom	kms	4	3	1
Gunshots	30 to 450	8	7	4
	>500	9	1	
Human walking	20 to 100	10	10	9
	100 to 300	11	9	5
	>300	10	4	2
Human and dog	150	2	2	2
Dog only	150	1	1	
Trail bike	15 to 50	4	4	1
	50 to 150	5	3	
	150 to 200	4	1	
	>400	8	3	
Auto (car horn)	35 to 800	17	9	2
Auto (stopped)	35 to 100	5	2	2
	150 to 250	7	7	2
	400 to 500	21	7	1
	>500	20	5	1
Auto (moving)	75 to 250	28	16	5
	>300	57	7	
Traffic on roads and highway	365	44	1	
Airplane	30 to 200	60	9	

The impacts of dispersed recreation on smaller animals is not well documented but a paper by Schimidly and Ditton (1979), studied recreation impacts on rodents in developed campsites. This study indicated that the only significant difference between the control sites and heavily used campgrounds was that more juveniles were found at the campgrounds and all ages of the animals weighed significantly more. Possible explanations for the differences include a lack of predators and supplemental feeding, resulting from recreation activities.

Ream (1979) suggests that campsites and recreation activities can result in habitat modification, possible harassment of wildlife, stress and additional exertion, and displacement of certain less tolerant species.

Along the South Platte River some impacts to wildlife are undoubtedly occurring but the lack of specific research allows only educated guesses about the extent of actual impacts. Deer, small mammals, beaver, and various bird species including hawks and eagles have been observed using the canyon. Based on personal observations and conversations with the wildlife biologist for the area, the majority of sightings have occurred during the week, when recreation use was minimal compared to the weekends. This cyclic recreation pattern is apparently acceptable to certain animal species who have adapted to the conditions. Unfortunately it is difficult to compare existing populations to those prior to heavy recreation use. Based on the amount of disturbed and lost habitat, numbers of recreationists, and the lack of weekend sightings, it appears reasonable to assume that some displacement and harassment of various wildlife species is occurring along the South Platte River.

Visual Quality: As mentioned earlier many impacts to the environment caused by dispersed roaded recreation activities are highly visible because of their locations.

The Forest Service has for numerous years realized the significance of visual impacts on the environment and as a result developed the Visual Resource Management (VRM) system. The VRM system inventories the landscape elements which affect visual quality and then establishes objectives for specific areas. For instance the VRM system places a high value on water elements like streams or lakes, and on areas near roads which are viewed by many people. Since most dispersed recreation activities occur in these areas, the visual quality is usually considered very sensitive and important.

Hart and DeByle (1978) suggest that, 'For the general public the most immediate and direct impact of land management activities (including recreation) is probably visual. When these activities create conditions that are alien to the expectations of visitors, a visual impact occurs.'

Along the South Platte River negative visual impacts are occurring from such factors as vegetation or soil loss, trash/litter, and the impacts from ground fires. Probably the most obvious visual impact is a result of large areas of bare or exposed soils, caused by camping and parking activities, contrasted with thick clumps of willows. Also there are many two-wheel vehicle tracks meandering across the flatter bench areas from recreationists attempting to access the stream bank, or find a more private campsite. Usually, scattered throughout these areas, are several large fire rings. The rocks creating the fire rings are blackened, and ashes or partially charred wood and unburned trash, is in and around the fire rings. Also the accumulation of trash and litter along the stream banks and in the willows detracts from the natural character of the site and produces additional negative visual impacts throughout the area.

All these impacts combine to reduce the visual quality of the area, and produce the impression of a more urban or modified site. The impacts of previous recreation activities are quite visible and reduce the natural appearance of the area.

Wildfires: Several studies have been completed on the relationships of dispersed recreation use and the frequency of wildfires. Hogans completed a three year study conducted between 1975-1977, which concluded that dispersed recreation activities clearly increased the risk of wildfires. Hogans (1979) reported that 39 percent of all of the wildfires in the study area were recreation-caused. Escaped, abandoned, or smoldering campfires were the leading cause of these wildfires. Hogans noted though, 93 percent of recreation-caused fires were very small (less than a 1/4 acre) with many of them (50%) requiring less than 30 minutes to control. He also found that recreationists in dispersed areas reported many more wildfires than they caused. This seems to indicate a possible benefit of having dispersed recreationists in the national forests. Only additional studies will verify the significance of these findings though.

Along the South Platte River there is a fire danger, but when compared to the number of users the actual percentage of wildfires is small. The past experiences along the river seem to verify Hogans conclusions. In many cases, the fires are small and do not destroy much vegetation. There are several possible reasons for this situation. In many of the heavily used areas fire rings are located in open areas where all of the flammable materials have been trampled or used for firewood by recreationists. Also the type of vegetation in the riparian areas, (willows and sedges), have high moisture contents and therefore are difficult to burn (Unfortunately this does not stop many of the users from trying).

In the past two years the majority of wildfires along the South Platte River occurred either from illegal fireworks, or campfire, built higher on the surrounding slopes where dryer grasses and more abundant ground cover exists. None of these wildfires have been larger than a 1/4 of an acre.

## 2. User Concerns:

Overcrowding: One of the main reasons many dispersed roaded recreationists prefer this style of camping is the opportunity it affords for "getting away from the crowds." User surveys indicate many visitors are from large, metropolitan areas and are often camping or recreating for only a day or two (Hendee et al., 1976). This desire to escape crowds may be more important for individuals from larger cities who interact with many people during the week. This may partially explain the typical weekend patterns and user types of dispersed roaded areas. Overcrowding of a particular area can be a major problem for some users. Unfortunately, what is crowded for one person is acceptable to another and trying to determine what is the capacity of an area from a social standpoint, is extremely subjective. Not only does it depend on the person but also their expectations. For example, a person may be willing to except many more recreationists in an area on holiday weekends because he or she expects more crowds. Therefore, the issue of overcrowding of dispersed areas is extremely difficult to quantify or manage.

Currently the South Platte River corridor receives heavy use on summer weekends or holidays and especially during hot weather conditions. Both day use and camping occur throughout the summer. Based on personal observations and occasional conversations with recreationists, the issue of overcrowding varies widely. Most persons contacted said they would prefer less people but as long as they found a place to camp or stay, they would continue to use the area. Other people indicated they used the area during less crowded times to avoid problems.

It appears that use of this area is increasing and that overcrowding is a problem or becoming more of a problem for some users, but no quantitative data have been collected. At this time, physical and biological damage would seem to be more of a limiting factor than overcrowding, although some users like fisherman may disagree. The majority of users appear to accept or tolerate the existing conditions and relative to the area they are coming from, the South Platte River seems to provide some satisfaction and a desirable recreation experience. Possibly the freedom and opportunity to do their "own thing" is more important than overcrowding or privacy.

User Conflicts: Closely linked to overcrowding is user conflicts. I have divided user conflicts into two categories - the legitimate user and those groups who participate in illegal or socially unacceptable behavior no matter where it occurs.

Legitimate users: According to Downing and Clark (1979), most dispersed roaded recreationists seem unconcerned about conflicts with other recreationists. In the Pacific Northwest study mentioned earlier, only 32 percent of the recreationists indicated that user conflicts between different groups was a problem or felt it could be a problem in the future.

Along the South Platte River the potential for user conflicts may be greater, than in other areas, because of the large variety of activities and the narrow canyon. Over the past several years, Forest Service and sheriffs patrols have responded to many conflicts between various user groups. Although no quantitative data exist, I have observed frequent conflicts between the following groups:

- Fisherman vs. people floating in inter-tubes, rafts, and kayaks, or people swimming in the stream. Usually the fisherman is displaced because they feel the activity in the water disturbs the fish.
- Day users vs. dispersed campers. Often day users will invade or disturb overnight campers by recreating too close.
- Motorcycle or all terrain vehicle riding vs. other users. The noise, safety hazards, and dust from off-road vehicle use disturbs other campers and recreationists who do not ride these vehicles.
- People discharging firearms in the canyon. This may be one of the most dangerous situations in the canyon because of the amount of people using the area and the topography. Although no accidents have occurred the potential exists for a serious injury.

Several other uses which have been observed in the canyon and may create conflicts between users is playing loud music, nude sun bathing, boisterous parties, and allowing dogs to roam unattended.

The effect of these conflicts on dispersed roaded users is hard to determine. For instance, if a camper or recreationists encounters conflicts which are intolerable, they may decide to leave and look for another area. The manager may never know that there was a problem. If the user conflicts are tolerated or accepted by the user then

they may not identify the conflicts as a problem. Then in some cases, the users may seek areas where unruly behavior is allowed so they can participate. In other words, there seems to be a range of user conflicts occurring in dispersed roaded areas and the impacts are different for various groups. Again, user expectations and recreation patterns should be considered before any conclusions can be drawn about user conflicts.

It is the opinion of many managers that as conflicts between users increase, the type of user may change, and management problems can increase. Downing and Clark (1979) reported that 55 percent of managers considered user conflicts to be a serious problem in dispersed areas. Along the South Platte River, personal experiences indicate a possible shift in user type occurs during holiday and heavy use weekends. Less family oriented camping use is encountered while larger groups of teens and young adults are observed using the area. This apparent shift in user type may or may not be a direct result of potential or anticipated user conflicts, but based on the current situations it appears that user conflicts are a concern with some recreationists and managers along the South Platte River.

**Illegal Uses:** Illegal or unacceptable uses include being drunk and disorderly, using foul language, discharging fireworks, fighting, using illegal drugs, vandalism and thefts, or playing loud music and making noise throughout the night. All of these activities can and do disturb and create conflicts with other users in dispersed areas. Although the Forest Service does not allow any of these activities on national forest lands, patrol officers are usually not present when they occur. Often the only time these incidents are reported is after the fact and there is very little effective action which can be taken.

The extent that these activities occur along the South Platte River and the actual effect they have on legitimate users is not known. Based on the number of user reports and conversations with private landowners in the area, the percentage of these activities is higher than in other national forests. Therefore, it is reasonable to assume that these activities do adversely affect the dispersed roaded recreation opportunities along the South Platte River and will require additional management actions to resolve or reduce the conflicts.

**Litter and Garbage:** In reviewing the literature on dispersed recreation one of the most consistent complaints by users is the presence of trash, litter, and garbage in dispersed areas. Hoover et al.(1985), Knopf et al.(1984), Downing and Clark (1978), and Clark et al.(1984), all indicated that litter and

garbage was one of the highest concerns or undesirable characteristics identified by users in dispersed areas. Downing and Clark (1978) reported that 45 percent of the users who felt additional improvements may be needed, mentioned trash cans. Hendee et al (1976) indicates that based on the study in the Pacific northwest, 10 percent of the groups left garbage and one-third left litter. Also Downing and Moutsinas (1978) state that 92 percent of managers felt litter and garbage left by visitors was a serious or somewhat serious problem in dispersed areas.

Trash, litter, and garbage along the South Platte River is a major concern and a costly problem. Currently the South Platte Ranger District, in conjunction with the Denver Water Board, place trash cans and provide cleanup activities along the river corridor. The cost of this service is approximately \$24,000 dollars per year. Most recreationists appear to use the trash cans if they are not full, or put trash next to the cans if they are full. Unfortunately wind and animals tend to scatter the materials throughout the area. The willows and other dense vegetation trap much of the trash and make cleanup more time consuming and difficult.

Sanitation: Sanitation problems could be considered both a social and a managerial problem. As mentioned earlier, most day users and dispersed campers questioned in the Pacific northwest do not feel sanitation is a problem. According to Downing and Clark (1978) most users did not have self-contained toilet facilities and preferred that no facilities be provided in dispersed areas.

Along the South Platte River there may be a difference of opinion because of the concentrated use pattern and more open areas. During the summer of 1986, portable toilets were placed in heavily used areas for several weekends. These facilities were heavily used and many dispersed recreation groups, both campers and day users, indicated their approval of the facilities to Forest Service personnel. Also a field inspection of popular areas indicated that almost all areas among the taller vegetation, had been used for sanitation purposes. From these experiences it seems appropriate to assume that many users may be concerned with sanitation and would be receptive to some type of management actions.

Private Landowner Conflicts: Private landowners and dispersed recreationists have had conflicts for many years. Bingham (1978) reported that some of the more common problems private landowners face are damage to fences and gates, gates left open, regulatory signs being stolen or shot, vandalism of property, soil and crop damage from vehicles, and livestock shot or injured. In addition, landowners along the South Platte River have mentioned problems with noise from recreationists, reduced water quality

from sanitation problems, litter and trash, and a general disrespect for the landowners' property and rights.

On the other hand recreationists have complained about impacts from the private landowners, along the South Platte River. For instance some landowners have strung cable with barbed wire across the stream to discourage floating activities. Some users have been told they were trespassing on private lands and later found out they were on public lands.

Currently along the South Platte River there is a complicated land ownership pattern. Many areas are not clearly marked or consistently managed. This situation leads to confusion by the users, managers, and landowners.

### 3. Management Concerns:

Budget: Although most of the problems previously identified are also management concerns, there are additional problems which managers face. Currently Forest Service budgets have been drastically reduced. More emphasis has been placed on greater efficiency and generating more fees from developed sites. Since dispersed areas do not generate fees, there is less incentive to use the already limited dollars on dispersed area management. At the same time, recent Land Management Plan standards and guidelines require that resource damage and conflicts be eliminated or reduced to within acceptable levels. Most of the resource damage caused by recreation occurs in dispersed areas yet most of the money must be spent in developed sites for cleanup, maintenance, and administration. Unfortunately, the recreation and resource manager is caught in the middle and therefore, it appears that budget constraints may limit the amount of work possible in dispersed areas, given the current conditions. Any management actions in dispersed areas must be cost effective.

Law Enforcement and Medical Emergencies: User protection, law enforcement, and emergency responses can be a problem for forest officers in dispersed areas. Usually the only official people in dispersed recreation locations are Forest Service employees. This can be the case anywhere on the national forests but in dispersed recreation areas, it is especially true. Often forest officers are flagged down by recreationists and expected to respond to a disturbance or medical emergency. If not properly trained, this situation can be a frightening and frustrating time for both the employee and visitor.

Along the South Platte River these problems are increased because of the variety of activities occurring and the unregulated nature of dispersed recreation activities. Many dispersed recreationists appear to be willing to take more personal risks and therefore the frequency of accidents and injuries is

increased. This may be a characteristic of this 'style' of users but there are no research data to support this conclusion. Based only on the number of law enforcement and medical injury contacts along the South Platte River, this appears to be the situation. One area along the river which continually causes problems for recreationists is called the 'chutes'. It is a narrow section of stream with large boulders on each side. Numerous deaths and serious injuries have occurred from recreationists jumping and diving from the rocks, and rafters or people on inter-tubes floating through the rapids. Despite signs and law enforcement efforts, it is still one of the most popular areas on the river.

Law enforcement activities are especially difficult along the South Platte River corridor because of the variety of users. In the past two years Forest Service officers have dealt with felony criminals, drug addicts, drunk and disorderly groups, and street gangs, as well as vandals, illegal wood cutters, recreationists dangerously discharging firearms and fireworks, and domestic quarrels. Also Forest Service personnel have responded to drownings, vehicle accidents, rock climbing accidents, snake bites, and a variety of smaller injuries which have occurred.

Most of these situations are not unique to the South Platte River corridor but due to the magnitude of use, the number of occurrences appears to be greater than in other areas. It is impossible to ignore many of the problems and therefore any management activities must account for these situations.

#### E. Management Direction

The Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974, as amended by the National Forest Management Act (NFMA) of 1976 (16 USC 1600-1614), provided the framework and primary source of direction to the Forest Service for the development of Land and Resource Management Plans. These plans provide the standards and guidelines needed to effectively manage the national forests for the next 50 years.

Currently, management of the national forests is governed by the direction contained in the forests' approved Land and Resource Management Plan. This direction is based on a foundation of interdisciplinary planning and the premise that all uses of the national forests must be considered and evaluated. The plans allocated or divided the national forests into emphasis areas called prescription areas, and then established both general directions for the entire forest and specific directions for each prescription area. The combination of the general and specific directions, plus the standards and guidelines associated with this direction, provides the information needed to effectively manage the national forests.

The forest Plan also established broad goals for the various activities occurring on the forests. For dispersed recreation on the Pike National Forest two main goals were identified.

- Provide a broad spectrum of developed and dispersed recreation opportunities in accordance with identified needs and demands.
- Maintain approximately the current ratio of Recreation Opportunity Spectrum classes for dispersed recreation.

Also several related goals should be identified because they directly affect dispersed roaded recreation activities.

- Protect riparian areas and wetlands from degradation.
- Manage the visual resources to a desired condition that allows for acceptable alteration of the landscape.
- Conserve water and soil resources and prevent significant or permanent impairment of land productivity.

The Pike and San Isabel National Forest has completed their plan and has begun implementation. In some cases, along the South Platte River, the current management actions agree with the forest plans, other areas require monitoring to determine if current conditions meet the standards established by the plan, and finally, some situations are obviously not meeting the standards and will require specific actions to be in compliance.

#### 1. Land Management Plan Direction

This next section will review the LMP general and specific prescription area directions which should be met along the South Platte River corridor. LMP direction includes numerous resource areas which are not applicable or may only indirectly affect the recreation use along the river. Therefore only management direction for the most critical resource areas are discussed below.

Currently two prescription areas affect the South Platte River corridor. These include Management Prescription 2B-Rural and Roaded Natural Recreation Opportunities, and Management Prescription 9A-Riparian Area Management. Management Area 2B emphasizes recreation opportunities in roaded natural and rural ROS classifications. The main focus and purpose of these areas is providing both developed and dispersed recreation activities. Management Area 9A emphasizes preservation and maintenance of riparian ecosystems including aquatic resources. According to the plan, the goals for riparian areas are to provide healthy, self-perpetuating plant communities, meet water quality standards, provide habitats for viable populations of wildlife and fish, and provide stable stream channels. Development of

recreation facilities within the 100 year floodplain is prohibited and vehicular travel can be limited to designated roads and trails and at certain times of the year, if necessary. The specific directions for both these areas and general forest direction is combined and discussed below.

Each topic will be divided into 3 areas; a description of the management direction with appropriate standards and guidelines; how well the Forest Service is currently meeting the direction; and a brief discussion of what management options or alternatives the Forest Service has available. Only options which will meet the goals for the project expressed earlier, will be mentioned. A more complete discussion of options occurs in the Discussion and Recommendation section of this report.

Visual Resources: LMP direction is to apply the Visual Resource Management system to all national forest system lands. The adopted visual quality objective for the South Platte River is retention. This means all activities along the river, on Forest Service lands, should appear natural and thus 'retain' the character of the surrounding environment. Evidence of human activities should not be obvious or easily noticed by most people passing through the area. Currently this area does not meet Retention because of exposed soils and vegetation loss along the river banks, and evidence of camping activities such as fire rings. The options are limited but include replanting of major disturbed areas. In many cases, the compacted soils will need to be tilled or spaded to allow vegetation to grow, increase percolation, and reduce runoff. In very limited but critical places, topsoil may be needed to facilitate plant growth.

Dispersed Recreation Management: LMP direction is to provide a broad spectrum of opportunities for recreationists. Dispersed recreation activities should not exceed the ROS capacity which, for this area, is 2.5 people per acre of land. The capacity figure is adjusted for usable acres, patterns of use and general attractiveness of the area. Appendix A is a tabulation of the calculations and assumptions used to determine the capacity of this area based on LMF Standards. The calculated area capacity is 585 people at one time (PAOT), which results in approximately 54,000 RVD's per year. Currently the area receives approximately 150,000 RVD's of use. It appears that the capacity of the area is being exceeded. The options include further monitoring to verify the use figures; establishing parking areas which will indirectly control the number of people and establishing entrance stations or closing the area when capacities are reached.

Also LMP direction requires closing or rehabilitating dispersed sites when unacceptable environmental damage is occurring. The determination of site condition is based on the Frissell system (See appendix B for more information). Condition class 4 or 5 sites are required to be rehabilitated or closed if they cannot

be maintained in Frissell condition class 1-3. Certain designated sites are allowed, if they are maintained in condition class 4 and resource damage can be minimized. Most heavily used sites along the South Platte river are in Frissell condition class 4 or 5.

The options are limited but include temporarily closing sites and allowing natural regeneration to occur; physically rehabilitating areas with planting and soil conditioning; and designating camping and use sites or zones where resource damage can be controlled by natural or man-made barriers.

Finally the LMP general direction says to prohibit camping within 100 feet of streams and lakes unless justified by terrain and there is adequate protection of the riparian ecosystem. Many sites and use areas, along the South Platte river, are within 100 feet of the stream. In some cases the terrain and existing road is a limiting factor but in the majority of cases users prefer to be located as close to the water as possible. To prohibit camping within 100 feet of the stream would eliminate the majority of preferred and usable sites. Another option is establishing some camping and day use locations which limit environmental damage but provide the recreation experience desired by the user. For example, if camping sites were located on benches which were 5-10 feet above the stream channel the impacts to water quality and streamside vegetation might be reduced.

Wildlife and Fish Resources: All activities should provide for the habitat needs of management indicator species. LMP direction requires managers to maintain capability at 80 percent of potential capability, and provide habitat for viable populations of all native vertebrate species of fish and wildlife. Also any habitat improvement projects should be planned with input from a qualified wildlife biologist. Along the South Platte River, mule deer, beaver, and numerous bird species are considered indicator species. Currently the effect of recreational use along the South Platte River on wildlife and in particular indicator species has not been adequately studied so the only options appear to be monitoring and collection of additional data. It is possible that certain areas will need additional protection, especially for stream dependant species like beaver. Also threatened and endangered species habitat must be protected. The bald eagle has frequented the river corridor and may need specific management actions (refer to the strategies outlined in the Northern States Bald Eagle Recovery Plan USFWS 1983).

Fish habitat in the river is very good. As mentioned before the South Platte River produces more pounds of fish per acre than any other stream in Colorado according to the Colorado Division of Wildlife (approximately 600 lbs. per acre). LMP direction

requires fish populations which are at or near their potential to remain at existing levels. Where necessary fish habitat can be modified to improve conditions. Along the South Platte River previous fisheries improvement projects have been completed. There is the potential for additional fisheries work. The options for additional projects will be determined by the Forest Service fisheries biologist and should be coordinated with the recreation management activities.

Range and Silvicultural Activities: Currently there are no range allotments or suitable timber lands in the river corridor affected by recreation activities, so the LMP direction is not applicable for these resources.

Riparian Areas: LMP direction includes managing riparian areas to protect and maintain the ecosystem. This direction indicates that roads and trails should be closed to motorized travel when the surface would be damaged and resulting runoff into adjacent water bodies would exceed natural sediment limits. There are numerous situations along the South Platte River where there is a strong possibility that this problem occurs, and as an option seasonal closures may be needed. The LMP direction also requires motorized vehicles to be prohibited in all ecosystems, especially riparian ecosystems to protect soils, vegetation, or special wildlife habitat. This could also apply to several areas along the South Platte river.

Water Resource Improvement: LMP direction is to improve or maintain water quality to meet State and Federal water quality standards and to rehabilitate disturbed areas that are contributing sediment directly to the streams. In addition, the direction is to prevent stream channel instability, loss of channel area, and loss of water quality resulting from activities that alter the vegetative cover. As mentioned earlier, there are numerous areas along the South Platte River with exposed soils, and little or no vegetation present as a result of dispersed recreation activities. These areas are most likely contributing to stream sediment, but to what extent they have affected the water resources is not known. The options include revegetation of disturbed areas; limiting or prohibiting use of the sites; or reducing damage closest to the stream by limiting access. Also additional monitoring of heavily used areas to determine the actual rate of erosion and the adverse effects to the stream needs to occur.

Water quality is currently meeting the state standards but with increased use at popular sites water quality could be affected. The options to reduce problems include providing more sanitation facilities along the river; and limiting vehicular access to the water.

Soil Resource: LMP direction for soils is to maintain soil productivity and minimize man-related soil erosion. See Both visuals and water resources for the information and options on camping or day use areas. In addition motorcycle trail use along the roads and trails in the canyon is accelerating the natural rate of erosion. To what extent has not been quantified and it is not known if any adverse impacts on the riparian ecosystem are occurring. Therefore an adequate monitoring program needs to be implemented, but at this time, several additional options are possible. The trails could be relocated; implement seasonal closures of the trails; erosion control measures along the trails could be intensified; and minor site modification to create settling ponds is feasible.

Transportation and Trail System: The LMP direction requires the existing motorized routes be maintained, or new routes be developed as part of the transportation system. Also develop loop routes when possible but road densities should not exceed 4 miles of trail per square mile of land. Currently along the South Platte River the motorized trail system is well established and does not exceed the density standard. There are opportunities to examine several congested trailhead locations and provide better loop trail opportunities to eliminate motorcycle traffic on the main roads. Where possible all roads and trails should be located outside riparian areas according to LMP standards.

## 2. Additional Direction

In addition to the direction contained in the LMP, all proposed activities must comply with laws, regulation, Executive Orders, and direction in the Forest Service Manual. At this point a review of these documents is not necessary except to realize that before any proposed management actions occur on the ground, they will be checked for compliance with this direction.

**CHAPTER III**

**DISCUSSION**  
**AND**  
**RECOMMENDATIONS**

### III. DISCUSSION AND RECOMMENDATIONS

#### A. Discussion of Data

At this point it is necessary to compare user needs with resource impacts and management direction to see if acceptable alternatives can be developed which will accommodate everyone's needs and desires. This process is difficult and to date there is no literature which indicates anyone has been successful at resolving all issues. Several research articles (Lester and Calder 1978; Mann and Dull 1978; and Cole 1981) identified a variety of alternatives and options for resolving these problems, but often at the expense of the recreation opportunity. For example, some suggested site hardening, or closure, and increased regulations for the users. But as Downing and Clark (1978) concluded, "managers who opt for site hardening, more intensive development and increased regulation in response to dispersed recreation use will, more than likely, find themselves serving different clientele as the dispersed users move on to find areas that better meet their desires."

Many of these options do resolve the immediate site problems, especially resource related concerns, but in many cases the impacts are only displaced to a new location resulting in similar resource damage. Therefore only alternatives which will reduce or eliminate impacts, yet maintain the important elements of the recreation experience mentioned previously in the User Needs Section, will be identified. This approach may not appear to resolve all issues but when all factors are considered, I feel it will result in less, overall damage and meet the needs of a larger variety of recreationists.

It is probably unrealistic to expect that all conflicts can be completely resolved. Instead, I feel it is realistic to expect that many problems or impacts can be reduced, from the current situation, without drastically affecting the recreation experience of the majority of visitors. This approach should result in better compliance with the LMP. Studies indicate most users recognize the need for some changes or restrictions in their activities to reduce impacts, while at the same time most managers realize that any use of the land will result in some resource impacts. So the following discussion will attempt to develop and analyze possible options to reduce conflicts in dispersed roaded areas and more closely meet current Forest Service management direction, without significantly impacting the users' recreation experience.

These options are the first step in managing the area. If the options are not effective or become ineffective over time, then more costly or more restrictive measures can be implemented. In other words, the options mentioned in this are the first phase of a management program. It should be noted that only first phase options will be discussed in detail, although some second or third phase options are

mentioned. These options represent a realistic array of actions which can be implemented by the current management on the South Platte Ranger District. The criteria for identifying this set of options are:

1. The options represent the least costly methods available which reasonably resolve the issues. (Detailed cost analysis of each alternative or option is not included because the actual costs vary from one area to the next and use of volunteer groups or other forms of funding can significantly change the overall cost.)
2. The options are the least disruptive or restrictive to the user and yet can be enforced if necessary.
3. The options attempt to reasonably meet the needs and desires of the user. (This is important so the users are not displaced into other areas.)
4. The options provide improved resource and user protection and better meet the management standards identified in the LMP.

The format of the alternatives does not evaluate the alternatives against each other which is usually the case, but more as a discussion of a set of options which represent the minimum actions needed to resolve the major issues. Many additional options are possible but in most cases funding, manpower or other constraints make these options less desirable or feasible.

## B. Discussion of Options

Many problems or concerns with the environment are interrelated. Changing one factor can affect several other factors. Therefore the discussion of options for management actions and techniques, will identify the resource areas affected, describe the action, and discuss the effects of the actions on user experiences, the natural resources, and the Forest Service.

Recreation Zoning: One of the most important options which should be discussed is to create 'unofficial' recreation use zones in dispersed areas like the South Platte River corridor. The use zones would be based on an area's natural capability to accommodate certain uses. For example, areas which are intermingled with private land may be better suited for quieter activities like fishing, instead of rafting or overnight camping activities. The natural conditions of the stream may have sections popular for tubing, like the 'chutes', or large flat areas with trees for camping. These opportunities should be identified and unofficial use zones established.

The term 'unofficial' is used because this concept would not prohibit any recreation activities from occurring in a zone if the user desires, but instead all management activities would strongly support the particular use identified for that zone.

For example, if the area or zone is best suited for day use activities, like swimming and stream play, then it is more acceptable to provide designated parking and control vehicular use, but with good pedestrian access to a level sandy beach along the shore. Also more facilities like trash cans or portable toilets could be provided without as much impact to the recreation experience of the users. On the other hand, the opposite would be needed for camping areas based on user studies. Trees for shade and screening are important and natural rock barriers would be more appropriate with more space between sites. Vehicular access closer to the site and river would be more desirable.

By providing more of what a particular group or type of user is looking for, it is possible to informally control use and accommodate a variety of dispersed recreation opportunities. If this occurs in areas which naturally can accommodate the use the result should be a more enjoyable recreation experience. This approach is similar to one successfully used on snowmobile and cross-country ski trails in the Rocky Mountains. After users become familiar with certain areas, the user groups tend to regulate themselves with fewer conflicts. If recreation users see other similar users, in an area, they may figure it is a good spot for their activities. But, if the user is outnumbered by groups of less compatible users, they may tend to seek another locations.

This approach or option can directly improve resource areas including vegetation impacts, soil compaction, water quality, visual impacts, overcrowding, user and landowner conflicts, and law enforcement activities. Also the option indirectly affects wildlife habitat impacts, and sanitation concerns. By identifying areas which can accommodate certain uses, the resource impacts can be reduced. Indiscriminate vehicle driving is minimized, which reduces loss of vegetation, soil compaction, and visual impacts. With less exposed soil, sediment from runoff is reduced and water quality is improved, as well as reducing the number of vehicles next to the stream.

The zone concept reduces user conflicts between other recreation groups as well as landowners, because uses which are more compatible are aggregated together. Law enforcement activities are reduced and patrols can concentrate on certain areas depending on the types of use.

The affects to the recreation experience of the user should be positive. Since user conflicts are reduced, and because the

natural capability of the site is maximized, the user will have better and more opportunities to participate in the type of recreation desired. Plus the user is unaware of any regulation occurring and yet more acceptable use patterns can be developed with less resource damage.

This option will require some time to adjust use patterns and will not be completely successful in that some users will still recreate in areas which are managed for other uses. This situation is acceptable though, because the user is making the choice. Also it is important to realize that a variety of recreation opportunities are still available for users.

The process and specific criteria used to identify the various zones will have to be fully developed and is not included in this document. The process will be to specify criteria like preferred camping, rafting, fishing and day use areas. Then, this criteria can be used to locate the opportunities and constraints on a map, and by overlaying these maps, it should be possible to identify preferred recreation zones. In areas of conflict some compromises will need to be made, but overall a variety of uses should be maintained.

Replanting Disturbed Areas and/or Rotating Sites: To reduce the resource problems associated with the loss of vegetation, exposed soil, visual impacts, loss of wildlife and fish habitat, and water quality impacts, an option is to replant disturbed areas with native riparian vegetation or close some areas to allow natural revegetation to occur. Willows, cottonwood trees, and hardy grass or ground cover species like berries, could be planted in certain areas. On other sites that will have continued use, the soil should be spaded or tilled to reduce soil compaction and if possible a hardy grass seed mixture spread to reduce erosion and improve visual quality. Smith (1978) explored transplanting and spading techniques and concluded that both techniques can be effective in reducing impacts on vegetation caused by dispersed recreation activities. In other situations the site may need to be closed and use rotated to another area. This latter option depends on additional land being available, and the land base must offer the potential for similar recreation opportunities otherwise the users may be displaced.

This revegetation, either natural or by replanting, would help provide visual screening, more wildlife habitat if the correct species are planted, replace lost over story trees, reduce exposed soils and sediment in the South Platte River. Also, it would improve water quality and thus maintain fish habitat.

The impacts to the users' recreation experience would be minimal as long as the existing recreation opportunities are still available. Although some areas may be reduced in size, more screening, shade and privacy will be created which should improve

the recreation experience. Wildfire impacts could be increased as a result of additional vegetation, and until plants are well established, the treated or closed areas would have to be adequately protected. Obviously this option will require continued activity over several years to be effective. In conjunction with other resource protection actions, all three options can be effective for reducing many resource impacts.

Vehicle Barriers: Vehicle barriers could reduce resource impacts on vegetation, soils, water quality, wildlife, and visual quality. Indirectly, vehicle barriers will help control overcrowding and conflicts with private landowners. A variety of vehicle barriers can be used to reduce indiscriminate driving in the riparian areas. Rocks, dirt berms, trees and other natural barriers provide durable, low cost materials, which project a low level of management. Other barriers like wire fencing, cables or chains, or typical wooden posts and rails can be used and are effective, but should be minimized. This latter type of barriers project a stronger image of control and regimentation, and maintenance is often much more costly.

Vehicles would be excluded from sensitive areas. This would result in less damage and loss of vegetation and reduce soil compaction significantly. Reducing exposed soils and vehicle traffic near the stream, wildlife habitat and visual quality would be improved. Also the vehicle barriers could limit the number of vehicles in an area and thus reduce overcrowding and private landowner conflicts.

Vehicle barriers would cause impacts to the recreation user. A degree of freedom on sites with vehicle barriers would be lost. If the vehicle barriers consist of natural materials and are properly placed on the site, this loss of freedom can be minimized. The vehicle barriers in camping areas can be placed so that the camping opportunities still exist but vehicles are not allowed to drive throughout the site. This approach is a compromise between managers and dispersed recreation users. Less sensitive resource areas need to be left open so users still have some freedom, while sensitive areas can be protected.

Installation and maintenance of the barriers would increase management costs and efforts. Law enforcement activities would be required to enforce the barrier restrictions and maintenance activities would be needed to replace barriers or repair damage from vehicles trying to go around the barriers. These activities should decrease after the first or second year but will continue to be needed.

Motorcycle Activity: Rerouting motorcycle trails would reduce soil loss, increase visual quality, and most important, reduce overcrowding, user conflicts, safety problems and law enforcement activities. The trails entering the South Platte River corridor,

at highly popular locations, can be rerouted to less congested areas, and designed with less grade if the terrain is suitable. Currently several trail locations may have opportunities to be moved. In most cases, the new trailhead locations could provide additional vehicle parking for the users. On trails which can not be moved, trail maintenance structures can be increased near the stream to reduce resource impacts.

Development of an additional trail which parallels the existing road is needed to provide an opportunity for non-licensed riders to utilize the loop trails. This option will require considerable planning and development but would be an important addition to the motorcycle trail system.

Through proper location of motorcycle trails, damage and loss of the soil can be minimized. According to Dunnell (1980), most trail damage is caused by improper trail location and construction rather than improper use. Also Dunnell suggests that the soil compaction and rutting of trails can be reduced by controlling steep grades, hardening switchbacks and locating trails in less erodible soils, where possible. By rerouting the trails many of these standards can be met. Also the visual quality can be improved because the amounts of exposed soil should be less and rerouted trails can take advantage of existing terrain, vegetation and natural variety in the landscape, to help screen the view of the trails.

The rerouting of the motorcycle trails should not significantly affect the user experience. Access and safety of the trails should be improved and eventually more families can enjoy the loop trail riding opportunities without riding illegally on public roads. The total miles of trail would increase after loop trails are developed.

Management activities should be reduced because the rerouted trails should reduce user conflicts, illegal riding activities and hopefully accidents. Maintenance activities, as well as new trail construction, would increase but, by using volunteers, especially motorcycle clubs, much of this work can be accomplished inexpensively.

One area of concern with motorcycle use which has not been addressed yet, is motorcycle riding activity near camping sites along the river. Often juveniles will ride close to camping areas so that parents can supervise the activities. If there is not a suitable location for these activities, especially in riparian areas, resource and user conflicts can occur. To reduce these impacts, two options are possible. Popular camping areas where this use occurs, should be linked to the main trail with properly located spur trails, and/or special riding areas can be developed near camping areas. Dunnell (1980), suggest utilizing rock pits, abandoned road beds, or other less sensitive areas.

Along the South Platte River the opportunities may be limited but this activity should be considered when identifying potential camping and use areas. If riding opportunities can be adequately developed then law enforcement activities in highly sensitive areas should be more effective in managing this type of use.

Providing Facilities: Although many dispersed roaded users indicated they do not want or require any facilities, in heavily used areas, minimum facilities may be necessary to reduce concentrated impacts. Without some action these sites can deteriorate to a point where even the current user is dissatisfied. The critical problem areas include sanitation and litter.

Sanitation: To reduce impacts on water quality, wildlife, visual quality, and private landowners, portable toilets could be an acceptable option. The toilets would be placed at critical locations along the river during holidays and anticipated heavy use weekends. These facilities would reduce the concentrations of human waste, thus reducing the possibility of water pollution and human health hazards, as well as maximize the sites natural capability to decompose the remaining waste. Research by Christensen et al (1978) indicates that water quality is most likely affected by dispersed recreation activities during periods of concentrated use. Therefore, portable toilets should be very effective at reducing the resource impacts because they would be used during periods of heaviest use. Impacts to wildlife from the spread of disease through contact with human waste may be reduced also. The visual quality would be improved because of less amounts of toilet paper and human waste visible at the sites. Finally, user and landowner conflicts would be reduced because less people would be forced to seek acceptable areas for sanitation purposes near other groups or private property.

Some dispersed recreation users may react negatively to additional facilities like toilets but experiments in 1986 indicated that the majority of users would welcome and support this option along the South Platte River corridor. Portable facilities provide the flexibility to be removed when no longer needed, and are only used during times when most users would expect a more urban experience because of increased users. Also these facilities should not significantly attract the additional recreationists that are usually associated with permanent facilities.

The cost of providing portable toilets is a major concern for management, but it may be the least costly alternative available, short of doing nothing or prohibiting use (both these options are considered unacceptable because they do not meet the goals for the LMP or the user). In many

developed facilities, including non-fee areas, it is necessary to pump toilet vaults and therefore, it is an accepted cost of providing that type of recreation opportunity. This same reasoning should apply to dispersed roaded recreation activities with regards to portable toilets. In addition to the cost, this alternative would require more maintenance activity to keep the toilets clean and stocked with paper, plus the opportunity for vandalism is increased. These impacts would be minor though because the toilets are only used occasionally throughout the summer.

Trash Containers: The option of providing trash containers in designated locations would reduce the impacts of litter on wildlife, visual quality, user experience, landowner conflicts and indirectly water quality. Currently trash cans are provided along the South Platte River, but because of increasing use, larger trash bins are needed. It is important to realize that numerous past attempts to establish a pack-in/pack-out policy along the South Platte River, have not been successful. In some areas this has been an effective approach and should be tried before providing any trash facilities in an area. Unfortunately, efforts along the South Platte River have helped, but the volume of trash which accumulates is still unacceptable. Since the trash cans were placed along the river, it has been easier to control the impacts from litter.

The trash bins would be placed as close to the road as possible to avoid interfering with recreation activities along the river. The trash bins would be emptied once a week during the summer and probably removed in the winter. Each bin would be secured or locked in place to reduce potential vandalism.

The trash bins should result in less trash being scattered by animals or the wind, and the larger capacity of the containers would allow more trash to be collected. This should result in improved visual and water quality, along with reducing landowner impacts associated with cleaning up their private property.

The placement of trash bins has the potential to change the recreation experience of those recreationists who do not want additional facilities, but since trash cans are currently placed along the river, switching to trash bins should not cause a significant impact or change to most users. Reduced litter and trash along the river should improve the recreation experience for many users by maintaining the natural character of the river.

Management activities should be reduced because there would be less work and time needed for clean up crews or volunteers. In this case, the cost is minimal because the Forest Service owns a trash compactor to handle the bins, but in many areas which are close to large cities, reasonably priced, private trash contracts can be obtained if needed. As with sanitation facilities, trash containers should only be used during the high use season and only in heavily used areas. All other areas should encourage recreationists to pack their trash home.

Signs: Research by Clark et al (1984) indicated that dispersed recreationists accepted directional type signing more than regulatory type signs. Along the South Platte River most signs have been damaged and compliance is minimal regardless of the message. Therefore, all signing should be minimized, and only signs which provide directional information or identify serious safety hazards should be used in the river canyon. The exception to this rule is that at the five major entrance points into the South Platte River corridor, one large regulatory sign indicating the significant travel and use restrictions should be installed. This type of sign is necessary so that law enforcement officers can enforce the Code of Federal Regulations. By placing the sign at entrance points vandalism should be reduced because people will not be spending a great deal of time in these locations. Most all users should see the sign but the canyon itself will be relatively free of signs. This should reduce the impacts to the recreation experience of the users while still allowing law enforcement activities to occur.

No other recreation facilities would be provided in the dispersed roaded recreation areas.

Clean Up And Maintenance Activities: To reduce impacts on all resources and improve the recreation experience, clean up and maintenance activities in dispersed roaded recreation areas should be emphasized. The clean up crews should concentrate on litter and trash pick-up, cleaning ashes from fire rings, and replacing or repairing damaged vehicle barriers.

The impacts on vegetation, wildlife, visual quality and water quality would be reduced as a result of less litter and damage to the vegetation. By cleaning ashes from fire rings, the need to build additional fire circles is reduced, and if properly located fire rings are encouraged, then the wildfire danger can be reduced. In other words, clean up crews should dismantle or move rock fire rings located near flammable vegetation and leave only the fire rings safely located in open areas.

The proposed clean up activities should not adversely impact the recreation experience of users because most of the work would occur during the week when use is lightest. In most cases the users' experience should be improved because of a more natural appearing environment.

Concessionaire Management Option: One option associated with clean-up and maintenance activities is the possibility of allowing a private operation to maintain and manage the area. This arrangement could be very effective if the concessionaire is allowed to charge a fee for entrance into the area. Currently the Forest Service cannot charge for day use activities. The narrow canyon of the South Platte would allow for such activities because the canyon has limited access points. This option is similar to the current programs for Forest Service developed facilities. There would be some caution regarding the use of concessionaires maintaining and managing dispersed roaded activities, in that the user's recreation experience has the potential to be changed if the private operator is not closely monitored. The advantage is that this option could reduce Forest Service costs of heavily used dispersed roaded areas while still protecting the resources if managed properly.

Law Enforcement Activities: The Pacific Northwest study reported by Clark et al. (1984), found that most dispersed roaded recreationists express strong support for the presence of agency personnel. Therefore, this option is to increase law enforcement activities along the South Platte River corridor during periods of heavy use like summer weekends and evenings. The patrols should concentrate on discouraging illegal uses, and disruptive activities, but should not limit legitimate recreation activities.

The presence of agency personnel at other than normal working hours should discourage some users from 'taking chances' like driving around barriers, damaging vegetation or causing user conflicts. As a result this option should indirectly help reduce impacts to vegetation, soil, water and visual quality, and wildlife.

The recreation user experience should be improved for those people participating in legitimate uses. Agency personnel would be available to respond to emergencies like accidents, wildfires and user conflicts, during the time that these activities most often occur. This would reduce user and landowner conflicts, and if those people who participate in illegal activities are eliminated or reduced, then more area would be available for legitimate recreationists.

The management concerns of the Forest Service include additional costs of off-hour patrols, and safety of the employees. In addition to regular pay there could be holiday, Sunday, and night

differential pay for patrol personnel. Also, for the safety of the employees, all evening or night patrols would require that two law enforcement officers with authority to carry firearms, would work together. Unfortunately, without this type of approach, past experiences along the South Platte River indicate that unlawful activities can increase to a point of eventually eliminating the legitimate recreationists, and significantly increasing resource damage.

One additional restriction which should be imposed along the South Platte River corridor, is a firearm shooting closure. All shooting activities should be specifically prohibited within 1/2 mile of the South Platte River because of the concentration of people, private property and vehicles. This activity is a legitimate use on Forest Service land, but it is too dangerous along this portion of the river. A safe shooting location in the general vicinity, should be developed so that this recreation opportunity is not eliminated.

Monitoring Activities: Several resource areas identified in the LMP require management actions if certain impacts are occurring. Unfortunately, along the South Platte River, as in many dispersed recreation areas, there is no clear measure of impacts for resources like water quality, wildlife impacts, vegetation and soils, or visual resources. Therefore, an appropriate monitoring program to determine baseline conditions and possible impacts caused by recreation activities is needed. Also monitoring of the resources can provide feedback on the effectiveness of management actions.

The proposed option for monitoring activities is to enlist the help of local colleges or universities to begin collecting data and developing a comprehensive, scientific monitoring program in heavily used dispersed recreation areas. Preferably measurements on water quality, soil erosion, loss and changes in vegetation type, and wildlife habitat conditions should occur.

In areas where this scientific approach is not feasible, at a minimum, a program of establishing consistent photo points at popular areas should be started. The photos taken, over a period of time, could provide some indication of the impacts or changes in an area, and in conjunction with recreation use counts, should help establish valuable baseline data for monitoring resource impacts.

Educational Programs: The ultimate goal of any recreation program, especially dispersed recreation, should be to have recreationists, understand the impacts they cause, and be self-regulating in their recreation activities. Clark et al. (1984), and others have found that most users are unaware that their actions cause resource impacts and do not perceive many

problems. This would indicate that additional public education is necessary to achieve the goal mentioned above.

For the purposes of this paper, a detailed user education program is not necessary. What is important to recognize is that visitor education, through personal contacts, signing, handouts, local programs with recreational clubs, and sporting goods stores etc., is a valuable management tool. Opportunities to develop a strong visitor education program in dispersed roaded areas are limited because of the style of recreation, but this option may prove to be the most effective method for developing long term solutions to the resource problems identified earlier.

The various management and resource options identified should reduce or eliminate many of the major resource problems associated with dispersed roaded recreation activities. As mentioned before, any recreation activity will cause some impacts. These proposed options should reduce the impacts to an acceptable level without significantly affecting the recreation experience of the users, although some changes or restrictions occur. Also, some compromises by both the user and management are proposed, but for both sides the impacts are minimized and should be acceptable.

## **CHAPTER IV**

# **SUMMARY AND CONCLUSIONS**

#### IV. SUMMARY AND CONCLUSIONS

##### A. Summary

This report has examined the problem of past Forest Service management practices in regards to dispersed roaded recreation activities. Developing camping facilities or prohibiting this type of use has not resolved any concerns or problems, but instead it has displaced the use into new areas, resulting in wider spread resource impacts and disrupting the recreational experience of many users.

Current Forest Service use reports indicate dispersed recreation activities account for over 2/3 of all recreation on the national forests, and this style of use is the fastest growing form of recreation in the United States today. Without proper management, the impacts to the natural resources as well as the recreation opportunities could be devastating.

After analyzing the available research data on user preference, several consistent factors were identified for this style of use. The user's number one preference was for sites with access to water. In addition users preferred relatively flat areas which could accommodate larger groups, areas with high scenic quality, and with trees or vegetation which provided screening and visual isolation from other groups. Also, areas which provide good fishing and hunting opportunities for various wildlife species or areas with good opportunities for certain activities like rafting or mountain climbing, are sought by users.

Dispersed roaded recreationists like the freedom or lack of regimentation found in most developed sites as well as the variety of activities allowed in these undeveloped areas. Users prefer the ability to alter the sites to suit their needs, and the privacy from other groups.

Allowing this style of recreation does create resource impacts though. Research on the impacts and a case study of the South Platte River corridor (a heavily used dispersed area near Denver Colorado), indicates that often vegetation is damaged or eliminated in high use areas, soil compaction and erosion is increased, and a reduction in visual and water quality can occur. Wildlife habitat is lost and increased recreation activities can displace certain animal species. Also the potential for wildfires is increased, but most recreation caused fires are small and quickly extinguished.

In heavily used areas, overcrowding can be a problem for some users as well as user conflicts between various recreation activities, like fishing and rafting. Along the South Platte River corridor conflicts with private landowners also occurs.

Management concerns include increased litter and garbage, sanitation problems such as the concentration of human waste, and law enforcement problems like vandalism or illegal activities. Also, accidents and user safety problems increase in heavily used areas like the South Platte River corridor. With reduced budgets and an increasing emphasis on implementation of the Land and Resource Management Plans, administration of dispersed roaded recreation areas is more difficult than ever before.

Numerous options or alternatives were identified which should reduce resource, user, and management problems. These options were developed because they allow the majority of dispersed roaded recreation activities to continue, but do not force users to relocate into other areas. Identifying 'unofficial' use zones, and using appropriate revegetation techniques, natural vehicle barriers, and rerouting motorized trails, many resource impacts can be reduced. In addition, placing portable toilets and trash containers in heavily used areas, during peak use periods, would help reduce resource and user conflicts significantly.

Finally, increased clean up and law enforcement patrols would further reduce user conflicts and user safety concerns. Monitoring of resource impacts is important to establish baseline data and determining to what extent dispersed recreation activities were affecting sensitive resources. Public education was identified as an important management tool to begin developing a long term solution to the problems and opportunities associated with dispersed roaded recreation activities.

## B. Conclusions

The information gathered and the recommendations identified in this study, supports the idea that management of dispersed roaded recreation areas is possible without eliminating the existing recreation opportunities or displacing the users. By applying the options identified, managers can begin developing a management plan for the South Platte River corridor. Most of the information can also be applied to other dispersed roaded recreation areas to help realize the full potential of many areas on the national forests.

By no means though, are the options or alternatives identified in this study intended to be the final answer or complete solution to the dilemma of providing dispersed roaded recreation opportunities. These options still need to be field tested to determine their effectiveness. Instead, the proposed options are offered as simply a starting point for managers who are faced with managing areas like the South Platte River corridor. As Clark et al (1984) observed, "Only the sensitivity of managers and their creativity in finding ways to accommodate forest visitors will the opportunities for dispersed roaded recreation be maximized."

To implement the proposed options the following steps must be taken. First the entire South Platte River Corridor must be analyzed in detail and the physical site opportunities for such activities as fishing, rafting, swimming, camping, and other popular recreation activities should be identified on maps. Mainly physical features required for each activity can be mapped such as vegetation, soils, topography, fishing holes, rapids, natural beach areas, access points, etc. Along with these features the constraints such as private land, congested areas, or sensitive vegetation and wildlife habitat can be identified and mapped. Then by overlaying the recreation opportunities with the site constraints, the compatible areas as well as the conflict areas can be identified. The compatible areas will help define suitable recreation zones, while conflict areas will need to be allocated to a specific use. An even mixture of uses should be obtained in order to insure the largest variety of recreation activities are provided. Once the conflicts are resolved and the recreation zones established, then the specific management options can be applied to the various zones. For example an area identified for day use fishing might have formal vehicle parking areas developed and appropriately signed, while a potential overnight camping area might need tree planting, or an informal parking area designated.

The implementation of the various options will need to occur over a period of time, but a priority list for areas with severe resource or public safety concerns should be established as soon as possible.

Implementing the options identified in this paper may not resolve all resource impacts associated with dispersed roaded recreation opportunities or insure that all additional users will not be displaced again, but as mentioned earlier, these options should allow managers a chance to provide a recreation opportunity sought by over two thirds of the visitors using the national forests. As more managers realize the importance of providing and managing specific areas for this type of use, hopefully the "Nomads Of Recreation," will finally be able to stop searching for a place to enjoy their style of recreation in the national forests.

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# APPENDIX

## Appendix A



## LAND MANAGEMENT

### PAOT AND RVD CAPACITY

#### CALCULATIONS FOR SOUTH PLATTE RIVER

16.8 miles of river between N. Fork and South Platte confluence to Wigwam Club.

14.8 miles of road between N. Fork and South Platte confluence to Wigwam Club.

372 acres of "flat" F.S. land -

8.0 miles of road on F.S. land (25) acres assuming avg. 26' width

9.1 miles of river on F.S. land (39) acres assuming avg. 35' width

92 acres of "flat" F.S. land on other side of river from road assume 20%  
use on otherside of river = 18 acres used; 74 acres unused.

: 234 acres net usable land

assume: - high use level of 2.5 PAOT/acre

- use-capacity is reached on weekend & holidays between Memorial Day  
& Labor Day.

- weekday use is 30% of capacity between Memorial Day & Labor Day.

- off season weekday use (Labor Day - Memorial Day) is 5% of  
capacity.

- off season weekend/holiday use is 15% of capacity.

:  $234 \times 2.5 = 585$  Maximum PAOT Capacity

Weekend maximum capacity =  $585 \text{ PAOT} \times 35 \text{ days} = 20,475 \text{ PAOT-days}$

Weekday 30% capacity =  $175 \text{ PAOT} \times 73 \text{ days} = 12,775$

Offseason weekday 5% capacity =  $29 \text{ PAOT} \times 178 \text{ days} = 5,162$

Offseason weekend 15% capacity =  $88 \text{ PAOT} \times 79 \text{ days} = \underline{6,952}$

45,364 PAOT-days





### General Undeveloped Use

- assume: - 8 hours/day is used for fishing, swimming, rafting, picknicking, hiking, nature study, and other day-use.  
- 24 hours/day is used for overnight use; e.g. camping.  
- In peak season, 30% of use is overnight; 70% is day use.  
- in off season, 5% of use is overnight; 95 % is day use.

full capacity days = 20,475 PAOT-days x 30% overnight use x 2 RVD's = 12,285 RVD's

full capacity days = 20,475 PAOT-days x 70% day use x 8/12 RVD's = 9,555 RVD's

30% capacity days = 12,775 PAOT-days x 30% overnight use x 2 RVD's = 7,665 RVD's

30% capacity days = 12,775 PAOT-days x 70% day use x 8/12 RVD's = 5,962 RVD's

5% capacity days = 5,162 PAOT-days x 5% overnight use x 2 RVD's = 516 RVD's

5% capacity days = 5,162 PAOT-days x 95% day use x 8/12 RVD's = 3,269 RVD's

15% capacity days = 6,952 PAOT-days x 5% overnight use x 2 RVD's = 695 RVD's

15% capacity days = 6,952 PAOT-days x 95% day use x 8/12 RVD's = 4,403 RVD's

: Maximum capacity to meet LMP standards for high use, roaded natural  
is 44,350 RVD's.





### Road Use

- assume 25 acres of road
- 8 hours/day is used for automobiling
- 3 people/automobile

:  
full capacity = 62 VAOT x 35 days x 8/12 VD's = 1447 VD's x 3 = 4341 RVD's  
30% capacity = 19 VAOT x 73 days x 8/12 VD's = 925 VD's x 3 = 2775 RVD's  
5% capacity = 3 VAOT x 178 days x 8/12 VD's = 356 VD's x 3 = 1068 RVD's  
15% capacity = 9 VAOT x 79 days x 8/12 VD's = 474 VD's x 3 = 1422 RVD's

9606 RVD's

: Maximum capacity to meet LMP standards for high use, roaded natural  
is 9606 RVD's.





:

Maximum capacity to meet LMP standards for high use, roaded natural ls:

9,606 RVD's - Road Use  
+ 44,350 RVD's - General Undeveloped Use

53,956 RVD's/year

Note: Presently 314,854 RVD's/year in Two Forks area.



## Appendix B

## APPENDIX B

The Frissell class rating system was developed by Sydney S. Frissell as a simple, easily applied condition classification, and as an aid in the inventory and management of campsites. For a more detailed description of this system, please see the essay "Judging Recreation Impacts on Wilderness Campsites" by Sydney S. Frissell, Journal of Forestry, August, 1978.

Below is a brief description of each classification in terms of the impacts to Natural Resources.

<u>Condition Class</u>	<u>Visible Indicators</u>
1	Ground vegetation flattened but not permanently injured. Minimal physical change except for possibly a simple rock fireplace.
2	Ground vegetation worn away around fireplace or center of activity.
3	Ground vegetation lost on most of the site, but humus and litter still present in all but a few areas.
4	Bare mineral soil widespread. Tree roots exposed on the surface.
5	Soil erosion obvious. Trees reduced in vigor or dead.